

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claims 1-19 (Canceled).

Claim 20 (Currently Amended): The system of claim 7249, wherein the physiological parameters comprise at least one of activity level, posture, heart rate, respiration rate, respiratory volume, or core temperature.

Claim 21 (Currently Amended): The system of claim 7249, wherein physiological parameters comprise at least one of blood pressure, blood oxygen saturation, partial pressure of oxygen within blood, partial pressure of oxygen within cerebrospinal fluid, muscular activity, arterial blood flow, or galvanic skin response.

Claim 22 (Currently Amended): The system of claim 7249, wherein the processor determines a variability of at least one of the physiological parameters, and determines the sleep metric value for the physiological parameter based on the variability.

Claim 23 (Currently Amended): The system of claim 7249, wherein the processor determines at least one of a mean value and a median value of at least one of the physiological parameters, and determines the sleep metric value for the physiological parameter based on the at least one of the mean value and the median value.

Claims 24-25 (Canceled).

Claim 26 (Currently Amended): The system of claim 7225, wherein the processor determines the value of the overall sleep metric by averaging the values of the plurality of sleep metrics.

Claim 27 (Original): The system of claim 26, wherein the processor applies a weighting factor to at least one of values of the plurality of sleep metrics.

Claim 28 (Currently Amended): The system of claim 7249, further comprising a memory to store a threshold value, wherein the processor compares the value of the overall sleep metric to the a threshold value and determines whether the patient is asleep based on the comparison.

Claim 29 (Currently Amended): The system of claim 28, wherein the memory stores a plurality of threshold values, and the processor compares the value of the overall sleep metric to each of the threshold values and determines a sleep state of the patient based on the comparison.

Claim 30 (Previously Presented): The system of claim 29, wherein the processor determines whether the patient is in one of a rapid eye movement (REM) sleep state or a nonrapid eye movement (NREM) sleep state.

Claim 31 (Original): The system of claim 28, further comprising a user interface, wherein a user selects the threshold via the user interface.

Claim 32 (Previously Presented): The system of claim 28, wherein the processor controls delivery of a therapy to the patient by the implantable medical device based on the determination of whether the patient is asleep.

Claim 33 (Original): The system of claim 28, wherein the processor stores information indicating when the patient is asleep within the memory for retrieval by a user.

Claim 34 (Canceled).

Claim 35 (Currently Amended): The system of claim 7219, wherein the implantable medical device includes at least one of the sensors. ~~sensor~~.

Claim 36 (Currently Amended): The system of claim 7219, wherein the implantable medical device is coupled to at least one of the sensors ~~sensor~~ via a lead.

Claim 37 (Currently Amended): The system of claim 7219, wherein the implantable medical device is wirelessly coupled to at least one of the sensors. ~~sensor~~.

Claim 38 (Currently Amended): The system of claim 7219, wherein the implantable medical device comprises at least one of an implantable neurostimulator or an implantable pump.

Claim 39 (Canceled).

Claim 40 (Currently Amended): The system of claim 7339, further comprising means for generating at least one signal as a function of the physiological parameters, wherein the means for monitoring comprises means for monitoring the physiological parameters based on the signal.

Claims 41-42 (Canceled).

Claim 43 (Currently Amended): The system of claim 7341, further comprising means for comparing the value of the overall sleep metric to a threshold value and determining whether the patient is asleep based on the comparison.

Claim 44 (Original): The system of claim 43, further comprising:
means for delivering a therapy to the patient; and
means for controlling delivery of a therapy to the patient by the therapy delivery means based on the determination of whether the patient is asleep.

Claim 45 (Original): The system of claim 43, further comprising means for storing information indicating when the patient is asleep for retrieval by a user.

Claims 46-52 (Canceled).

Claim 53 (Currently Amended): A medical system comprising:

a plurality of sensors, each of the sensors generating a signal as a function of at least one a physiological parameter of a patient, wherein the physiological parameter comprises one of blood pressure, muscular activity, arterial blood flow, or galvanic skin response; and

an implantable medical device that includes a processor to:

monitor a plurality of the physiological parameters based on the signals output by the sensors, wherein the plurality of physiological parameters comprise at least one of blood pressure, muscular activity, arterial blood flow, or galvanic skin response, signal and

for each of the plurality of physiological parameters, determine a respective one of a plurality of sleep metric values, each of the sleep metric values indicating a non-binary probability of the patient being asleep based on the respective physiological parameter, and

mathematically combine the plurality of sleep metric values that each indicate that probability of the patient being asleep based on the respective one of the plurality physiological parameters to determine an overall sleep metric value that indicates an overall non-binary probability of the patient being asleep.

Claim 54 (Canceled).

Claim 55 (Currently Amended): The system of claim ~~53~~54,
wherein the implantable medical device further comprises a memory to store a threshold value, and

wherein the processor ~~determines a value of a sleep metric that indicates a sleep state of the patient based on the plurality of physiological parameters~~, compares the value of the overall sleep metric to a threshold value, and determines whether the patient is asleep ~~the non-binary probability of the patient being asleep~~ based on the comparison.

Claim 56 (Canceled).

Claim 57 (Currently Amended): The system of claim 53, wherein the processor controls delivery of a therapy to the patient based on the determination of the overall non-binary probability of the patient being asleep.

Claim 58 (Original): The system of claim 53,
wherein the implantable medical device further comprises a memory, and
wherein the processor stores information indicating when the patient is asleep within the memory for retrieval by a user.

Claim 59 (Currently Amended): The system of claim 53, wherein the implantable medical device includes at least one of the sensors. ~~sensor~~.

Claim 60 (Currently Amended): The system of claim 53, wherein the implantable medical device is coupled to at least one of the sensors ~~sensor~~ via a lead.

Claim 61 (Currently Amended): The system of claim 53, wherein the implantable medical device is wirelessly coupled to at least one of the sensors. ~~sensor~~.

Claim 62 (Previously Presented): The system of claim 53, wherein the implantable medical device comprises at least one of an implantable neurostimulator or an implantable pump.

Claims 63-71 (Canceled).

Claim 72 (Currently Amended): A medical system comprising:

a plurality of sensors, each of the sensors generating a signal as a function of at least one physiological parameter of a patient; and

an implantable medical device that includes a processor that:

monitors a plurality of physiological parameters of the patient based on the signals output by the sensors,

for each of the plurality of physiological parameters, determines a respective one of a plurality of sleep metric values, each of the sleep metric values indicating a non-binary probability of the patient being asleep based on the respective physiological parameter, and

mathematically combines the plurality of sleep metric values that each indicate ~~that~~ the non-binary probability of the patient being asleep based on the respective one of the plurality physiological parameters to determine an overall sleep metric value that indicates an overall non-binary probability of the patient being asleep.

Claim 73 (Currently Amended): A system comprising:

means for monitoring a plurality of physiological parameters of a patient;

implantable means for determining a respective one of a plurality of sleep metric values for each of the plurality of physiological parameters, each of the sleep metric values indicating a non-binary probability of the patient being asleep based on the respective physiological parameter; and

implantable means for mathematically combining the plurality of sleep metric values that each indicate ~~that~~ the non-binary probability of the patient being asleep based on the respective one of the plurality physiological parameters to determine an overall sleep metric value that indicates an overall non-binary probability of the patient being asleep.